

## HIGH AND LOW FREQUENCY BAND DUAL OUTPUT TRANSDUCER

## ABSTRACT OF THE DISCLOSURE

A transducer circuit, method, and system for conversion of a high-impedance, broad frequency range signal from a sensor into two low-impedance signals, one containing high-frequency components and another containing low-frequency components of the input signal. The sensor can be a piezoelectric (PE) sensor transforming motion or vibration into a high-impedance electrical signal with a broad frequency range. A low-frequency circuit output can contain the frequencies in the linear region of the sensor's frequency band. The high-frequency output can contain the natural resonance frequency of the sensor. The circuit includes a low-frequency filter amplifier module and a high-frequency filter amplifier module, both amplifier modules having negative feedback, high input impedance, and low output impedance; the outputs may include a DC bias. The circuit may also include a source follower isolating the filter amplifier modules from each other. Optionally, the source follower is electrically disposed between the sensor and the high frequency filter amplifier module and employs an operational amplifier. The voltage supply for the source follower can be provided by the output of the low-frequency filter amplifier. The circuit may include a variety of means aimed at eliminating noise and temperature sensitivity.

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